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**ASSIGNMENT BOOKLET**MAT1038 Applied Mathematics 10  
Module 7**FOR STUDENT USE ONLY**

Date Assignment Submitted:

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(If label is missing or incorrect)

File Number:

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Module Number: \_\_\_\_\_

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Assigned

Teacher: \_\_\_\_\_

Assignment

Grading: \_\_\_\_\_

Graded by: \_\_\_\_\_

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# **INSTRUCTIONS FOR SUBMITTING THIS DISTANCE LEARNING ASSIGNMENT BOOKLET**

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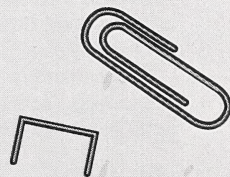
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# *Applied* MATHEMATICS 10

## Module 7 **Trigonometry** ASSIGNMENT BOOKLET



Learning  
Technologies  
Branch

**Alberta**  
LEARNING



## FOR TEACHER'S USE ONLY

### Summary

Total Possible Marks	Your Mark
60	

### Teacher's Comments

This document is intended for

Students	✓
Teachers	✓
Administrators	
Parents	
General Public	
Other	

Applied Mathematics 10  
Assignment Booklet  
Module 7  
Trigonometry  
Learning Technologies Branch  
ISBN 0-7741-1783-4

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## ASSIGNMENT BOOKLET

### APPLIED MATHEMATICS 10 – MODULE 7: TRIGONOMETRY

Your mark on this module will be determined by how well you do on the assignment in this Assignment Booklet and the module project in the Project Booklet.

The value of each part of the module assignment is stated in the left margin of this booklet. The total value of the module assignment is 60 marks.

60

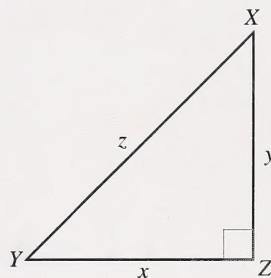
#### Module Assignment

Read all parts of this booklet carefully and record your answers in the appropriate places. Work slowly and carefully. If you are having difficulties, go back and review the appropriate activity in the Student Module Booklet.

Be sure to complete all parts of the assignment and proofread your responses before you submit this assignment to your teacher for grading.

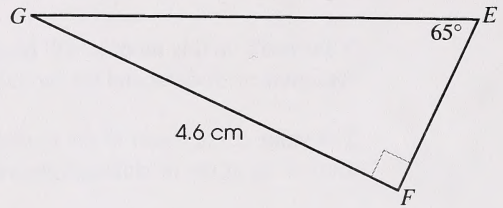
3

1. Write the sine, cosine, and tangent ratios for  $\angle X$  based on the following diagram.



③

2. In  $\triangle EFG$ , determine  $EF$ ,  $EG$ , and  $\angle G$ .  
Round lengths to the nearest tenth of a centimetre.



①

3. a. Explain how to measure, using the clinometer that you made in this module, the angle of elevation (or the angle of depression) from you to an object.

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①

- b. Explain how to measure, using the transit that you made in this module, the horizontal angle between you and two objects.

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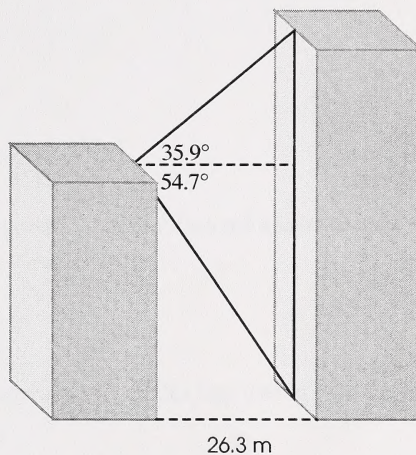
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⑥

4. Two buildings are 26.3 m apart. From the top of the shorter building, the angle of elevation to the top of the taller building is  $35.9^\circ$  and the angle of depression to the base of the taller building is  $54.7^\circ$ . What is the height of the taller building? Express your answer to the nearest tenth of a metre.



- ③ 5. Two fires are burning on opposite sides of a fire tower that is 90 m high. The fire ranger observes one fire to have an angle of depression of  $3^\circ$  and the other to have an angle of depression of  $5^\circ$ . Which fire is farther away? Explain how you know. Do **not** do any calculations. Assume the area between the fires is level.

6. Give the sine and cosine for each of the following angles.

② a.  $23^\circ$

② b.  $137^\circ$

② c.  $86^\circ$

7. Complete the following equations with the equivalent supplementary angle.

① a.  $\sin 42^\circ =$

① b.  $\cos 74^\circ =$

① c.  $\sin 156^\circ =$

① d.  $\cos 121^\circ =$

- ② 8. State the Sine Law in words.

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9. An airplane is coming in to land on a runway that is 2250 m in length. The angle of depression is  $11^\circ$  to the near end of the runway and  $9^\circ$  to the far end.

②

- a. Draw and label a diagram to illustrate this situation.

③

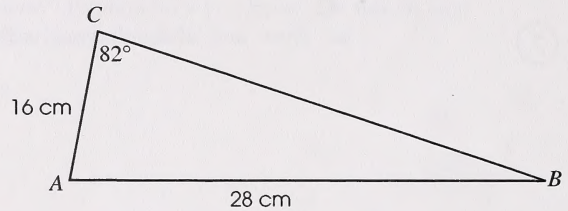
- b. Determine the measures of any angles required to find the length of the runway.

③

- c. How far is the airplane from the far end of the runway? Round the answer to the nearest metre.

3

10. Calculate the measure of  $\angle B$  in the given triangle. Round the answer to the nearest degree.



11. Two cabins are located 430 m apart on the same side of a lake. A lifeguard tower is located on the opposite side of the lake at an angle of  $72^\circ$  from cabin A and  $77^\circ$  from cabin B.

2

- a. Draw and label a diagram to illustrate the problem.

3

- b. Determine the distance from cabin A to the lifeguard tower. Round the answer to the nearest metre.



③

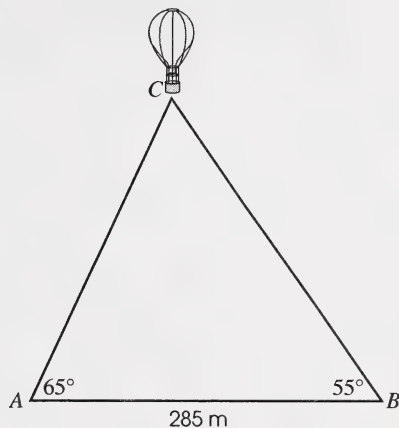
- 12.** A golfer consistently drives a golf ball 190 m. If she hits a drive down a fairway that is 83 m wide, what is the maximum angle between a drive to the left and a drive to the right that would still be on the fairway?

- ⑥ 13. Andrea, Fred, and Gurtek leave a dock and sail 10 km at a bearing of  $090^\circ$  to a fishing spot. After fishing for a while, they sail on a bearing of  $210^\circ$  to another spot 6 km away. The boat travels at 15 km/h. If the time is now 3:30 P.M., how long can they continue to fish at this location if they must return to the dock before dark at 6:30 P.M.? Calculate your answer to the nearest minute.



⑥

14. Two friends observe a hot-air balloon directly in line between them. Sara determines the angle of elevation to be  $65^\circ$  and Suki measures the angle of elevation to be  $55^\circ$ . The girls mark their spots and then measure the distance between the markers. They determine this distance to be 285 m. Determine the height of the balloon to the nearest metre from a point directly below.





**LRDC**

Applied Math 10  
Assignment Booklet  
Module 7

2000



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**PROJECT BOOKLET**

MAT1038 Applied Mathematics 10  
Module 7

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Assignment

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## **PROJECT BOOKLET**

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Be sure to complete all parts of the project and proofread your responses before submitting this project to your teacher for grading. If you require more room for any response, use your own paper and attach it securely to this booklet.

Your mark on this module will be determined by how well you do on the module project in this Project Booklet and the module assignment in the Assignment Booklet.

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40

#### **Module Project: Land Surveying**

Your project for Module 7: Trigonometry, is the Land Surveying project. This project involves surveying a plot of land and making a scale drawing of the boundaries of the plot and the location of key objects or structures.

The plot of land could be a portion of your schoolyard, front or back yard, a local playground, or a farmyard. You can create the boundaries of the plot by using stakes and ropes. Alternatively, you can use fences, curbs, sidewalks, paths, or buildings to define the outer boundaries of the plot of land. The edges of your plot of land should be straight, but the plot should not be rectangular.

On your chosen plot of land, there must be at least one object, such as a flagpole, tree, or power pole, that is too high to measure directly.

For the project, you will need a clinometer and a transit. You will also need a measuring tape or trundle wheel.

Follow the directions given on pages 328 and 329 of the textbook to make a clinometer and transit, and practise using these measuring devices.

- ⑦
1. a. Calculate the height of one of the tall objects on your plot of land. Use the method described on page 330 of the textbook. Show your work.

- ③
- b. You could have calculated the height of the tall object using only one right triangle. Describe a situation where the method used in question 1.a. would be useful. Include a diagram as a part of the description.



⑦

2. a. Calculate the height of another tall object on your plot of land. Use the method described on the bottom of page 369 and the top of page 370 of the textbook. Show your work.

③

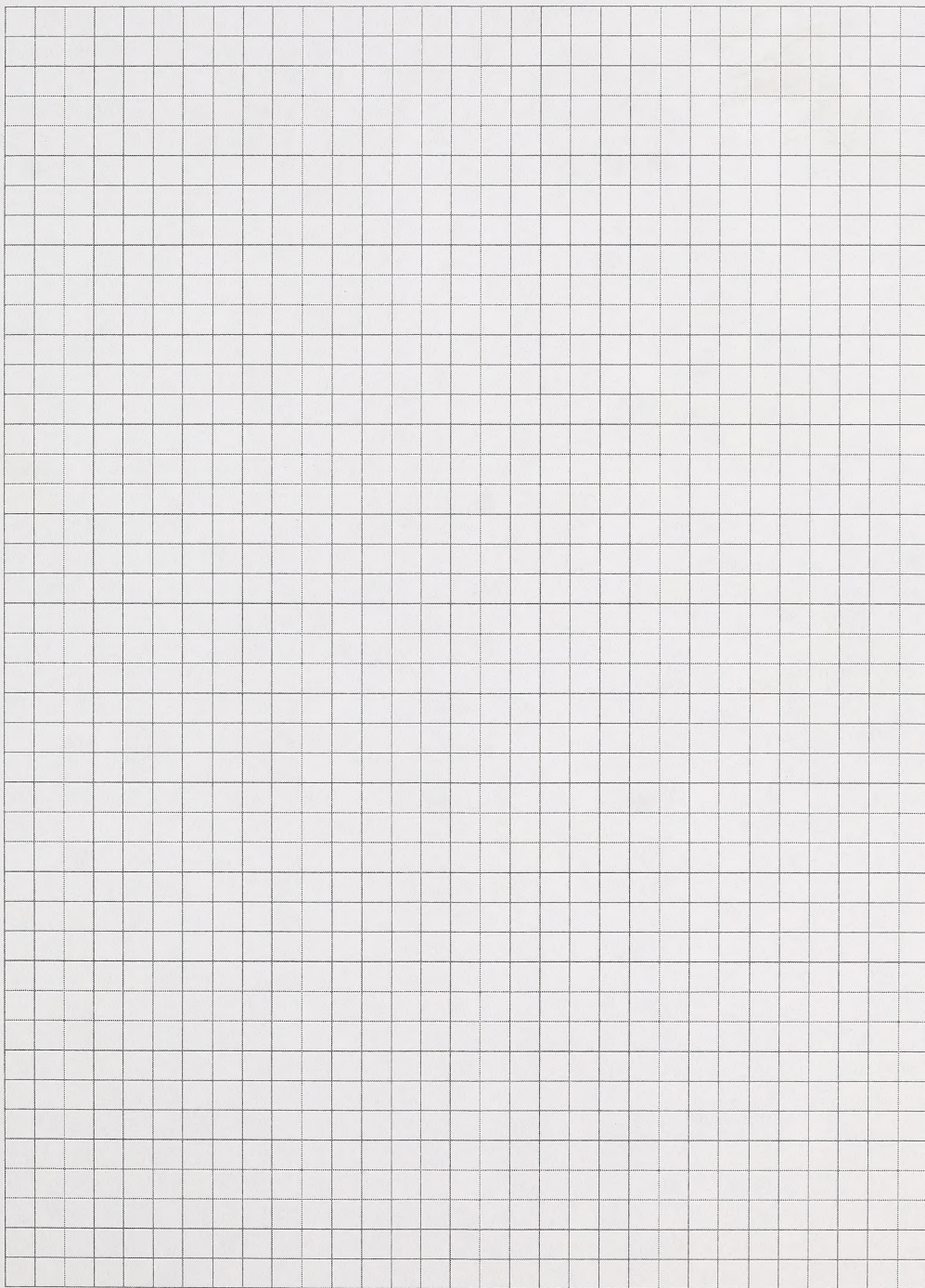
- b. You could have calculated the height using only one right triangle. Describe a situation where the method used in question 2.a. would be useful. Include a diagram as part of the explanation.

3. Measure the borders and angles of your chosen plot of land. Determine the position of any key objects or structures on the land.

- ⑤ a. In the space provided, summarize the data you have collected.

10

- b. Make a scale drawing of the plot of land on the given grid.





⑤

4. Write a summary report of what you learned from this project. Include how the surveying exercise applies to the mathematics you studied in this module.

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